UNIVERSITY OF TORONTO
UNIVERSITY EXTENSION
DIRECTOR: J·R·GILLEY · B·A·Sc·

SHORT COURSE IN STRUCTURAL AND MARINE GLUE LAMINATING

April 25th to April 29th, 1955.

This course, which is offered in cooperation with the Canadian Institute of Timber Construction, the Faculty of Forestry and the Department of Civil Engineering, has been designed to help plant operators and their glue room personnel improve their products through increasing their knowledge of how to save on time, material and labour. Procurement and inspection personnel in industry, government and the military will find the specialized training of this course to be helpful in establishing and maintaining quality control of glued and laminated wood products.

No previous technical training is required for enrollees to acquire valuable gluing information that can be applied promptly and advantageously in their own gluing operations. Through lectures in layman's terms technical data will be made clear and its use simple. Practical demonstrations and enrollee participation will provide background for selecting, preparing and using modern glues and gluing equipment and proper testing techniques. Those who enroll are invited to bring their particular gluing problems to the class for help in solving them.

COURSE TOPICS

(1) GLUE LAMINATING -- Historical development, processes, equipment, manufacturing controls, strength, uses; basic premises of glue laminating; relationship to plywoods and assembly gluing; fundamental nature of glue bond in industry.

(2) WOOD TECHNOLOGY -- Wood structure; ring porous, diffuse porous, and non-porous woods; strength of wood; wood-moisture relationship; study of wood types; strength testing; moisture content and specific gravity determinations.

(3) PRINCIPLES OF ADHESION -- What makes glue stick; mechanics of adhesion; specific and mechanical adhesion.

(4) TYPES OF ADHESIVES -- Composition; advantages and disadvantages, uses, and other characteristics of various adhesives; modification by extenders and fortifiers.

(5) PREPARATION OF STOCK -- Characteristics of laminating stock, tolerance; end joints; machining; kiln schedules, conditioning and storing.

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"Lifelong Learning"

(6) VARIABLES IN THE GLUING PROCESS -- Glue storage and handling, mixing; spread, assembly times, pressure requirements; effect of temperature and humidity variations; factors affecting bond strength; spread, assembly life, shelf life, pot life.

(7) MIXING, APPLYING ADHESIVES FOR TESTS -- Block shear, plywood and delamination tests; general procedure for mixing various types of glue; precautions; application and measurements.

(8) PREPARATION OF TEST SPECIMENS -- Mixing important glue types; preparation of wood blanks; weighing glue on blank; clamping; methods of applying.

(9) LABORATORY STUDY OF GLUING VARIABLES -- Preparation and testing of specimens in which the different variables which affect gluing are incorporated; demonstration of accurately cutting block, staircase, plywood shear, and delamination specimens.

(10) HANDLING, STORAGE, CARE OF ADHESIVES -- Discussion and demonstration of important factors.

(11) TESTING PROCEDURES -- C.S.A. standard block shear test procedure; consideration of U.S. and Canadian specifications; demonstration of testing in complete accord with C.S.A. standards.

(12) TESTS IN MANUFACTURING PLANTS -- Testing glued specimens on "home-made" testing equipment; tallying results; estimating wood failure; analysis of test results.

(13) GLUING OPERATIONS -- Mixing equipment, procedures, pot life, batch size; spreading equipment, setting up and adjustment; measurement of spread; quantity of spread required; open and closed assembly, typical assembly times.

(14) PRESSING AND CURING -- Function of pressure; clamping methods and equipment; measurement of pressure; curing principles and methods; equipment for elevating temperatures; measurement of curing conditions, curing schedules, cooling, breaking down.

(15) GLUING AND PRESERVATIVE TREATMENT OF WOOD -- Illustrations of successful gluing of treated wood, and treatment subsequent to gluing.

(16) CURING WITH HIGH-FREQUENCY -- Principles of curing glue lines with high frequency and direct heat; demonstration of curing procedures.

(17) QUALITY CONTROL METHODS -- How to establish and conduct a successful quality control program in a woodworking plant.

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(18) TROUBLE SHOOTING -- A round table solution of case history problems in gluing.

(19) GENERAL DISCUSSION -- Questions and answers on individual gluing problems. Enrollees are urged to bring their specific problems with them for the benefit of the combined thinking of the group.

INSTRUCTORS

COURSE DIRECTOR: R.F. DeGRACE

R.R. Blumenstein,
Assistant Director of Research,
Timber Engineering Company,
Washington, D.C.

E.G. Burgin, Engineer,
Forest Products Laboratories Div.,
Dept. Northern Affairs & National Resources,
Ottawa.

R.C. Cranch,
Timber Technologist,
Timber Engineering Company,
Washington, D.C.

R.F. DeGrace,
Executive Vice-President,
Canadian Institute of Timber Construction,
Ottawa.

R.B. McIntyre,
Special Lecturer,
Aeronautical Engineering
University of Toronto,
DeHavilland Aircraft of Canada Ltd.

Professor J.W.B. Sisam,
Dean, Faculty of Forestry,
University of Toronto.

REGISTRATION INFORMATION

The final date for enrolment in this course will be April 13th. The course will be held if a minimum of 20 persons enroll, and enrolment will be limited to 25. Applications will be accepted to this maximum according to the date received. Those wishing to enroll are requested to make their own hotel reservations [x]. Noon and evening meals may be obtained at a nominal fee in the Great Hall, Hart House. Lectures will be held in Room 34, Electrical Building, from 9:00 - 12:00 and 1:30 - 5:00 p.m.

Fee for the course is $75.00, and should be forwarded to The Director, University Extension, University of Toronto, 65 St. George Street, Toronto 5. Cheques at par, Toronto, bank money orders or postal notes, made out to the University of Toronto, should accompany application.

The fee of $75.00 includes instruction, laboratory work and printed material.

[x] The Park Plaza Hotel, 4 Avenue Road, WA.1-4184, is closest to the University Grounds.